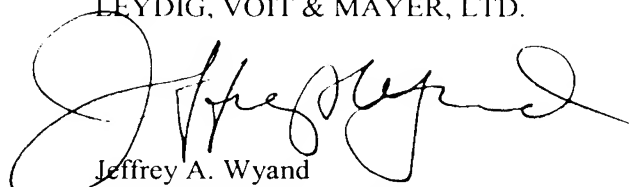


REMARKS

The foregoing Amendment conforms the claims to United States practice. No new matter is added.

Respectfully submitted,

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PATENT
Attorney Docket No. 401559/M&CHK

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

RAYMOND WAI HANG CHU

Art Unit: Unassigned

Application No. 10/058,766

Examiner: Unassigned

Filed: January 30, 2002

For: ELECTRICAL SWITCH ASSEMBLY

AMENDMENTS TO CLAIMS AND ABSTRACT
MADE VIA PRELIMINARY AMENDMENT

Amendments to existing claims:

1. (Amended) An electrical switch assembly for controlling ~~the~~ operation of an electrical appliance, ~~which assembly comprises at least~~ the switch comprising:

first and second electrical elements,

the first electrical element comprising an on/off switch for initially switching on ~~said~~ an appliance,

the second electrical element comprising a pressure-sensitive variable resistor for ~~subsequently adjusting the~~ operating condition of ~~said~~ the appliance, the variable resistor comprising a first part having a resilient deformable and electrically conducting resistive surface and a second part having a surface including ~~at least~~ two contacts and a resistive element connecting ~~from one of said the~~ contacts to the other ~~contact of the contacts~~, one of ~~said the~~ first and second parts being ~~supported for movement~~ moved to press against the other ~~part of the first and second parts~~ such that ~~their~~ respective surfaces of the first and second parts bear against one another, thereby causing the resistive surface to deform against the surface of the second part over an area of contact and causing electrical connection between the resistive surface and the resistive element, ~~which together then~~ to provide a resultant resistance between the two contacts ~~of a value that reduces declines as said the~~ area of contact increases, corresponding to ~~the~~ pressure ~~acting upon~~ applied to the two first and second parts, ~~the assembly including and~~

an operating mechanism ~~for~~ operating the first and second electrical elements, ~~said mechanism~~ and incorporating manual operating means ~~arranged~~ for initial movement to operate the on/off switch and subsequent movement, while the on/off switch is on, to ~~operate~~ change the resultant resistance of the variable resistor.

4. (Amended) The electrical switch assembly as claimed in claim 1, wherein the first part of the variable resistor comprises a portion ~~made~~ of a resilient deformable and electrically conducting resistive material ~~to provide~~ as the resistive surface.

6. (Amended) The electrical switch assembly as claimed in claim 1, wherein the first part of the variable resistor comprises a resilient deformable cup-shaped body including a base having an inner side on which the resistive surface is ~~provided~~ located.

7. (Amended) The electrical switch assembly as claimed in claim 6, wherein the cup-shaped body includes a substantially frusto-conical peripheral wall ~~that is foldable~~.

11. (Amended) The electrical switch assembly as claimed in claim 1, wherein ~~said part~~ the one of the first and second parts that is supported for movement ~~movable~~ moves to press against the other ~~part~~ of the first and second parts in a direction substantially perpendicular to ~~their~~ the respective surfaces of the first and second parts

12. (Amended) The electrical switch assembly as claimed in claim 1, wherein the first part of the variable resistor is ~~supported for movement to press against the second part,~~ movable and the second part is fixed.

13. (Amended) The electrical switch assembly as claimed in claim 12, wherein the second part ~~of the variable resistor is provided by a portion of~~ includes a printed circuit board.

14. (Amended) The electrical switch assembly as claimed in claim 1, wherein the first and second electrical elements have relatively larger and smaller current ratings, respectively.

16. (Amended) The electrical switch assembly as claimed in claim 1, wherein the resistive surface and the resistive element are ~~arranged to come~~ brought into electrical contact with each other when the respective surfaces of the first and second parts of the variable resistor bear against one another.

17. (Amended) The electrical switch assembly as claimed in claim 1, wherein the resistive surface and ~~said at least the two contacts are~~ arranged to come brought into electrical contact with each other when the ~~said~~ respective surfaces of the first and second parts of the variable resistor bear against one another.

18. (Amended) The electrical switch assembly as claimed in claim 17, wherein the

~~close together~~ for electrical contact with the resistive surface, and a corresponding ~~said~~ resistive element connecting ~~across the~~ adjacent contacts ~~of each pair~~.

19. (Amended) The electrical switch assembly as claimed in claim 1, wherein the operating mechanism includes a spring resiliently biasing the manual operating means against ~~operating operation of~~ the first and second electrical elements.

20. (Amended) The electrical switch assembly as claimed in claim 1, wherein the manual operating means comprises ~~first third and second fourth~~ parts for operating the on/off switch and the variable resistor respectively, the ~~first third~~ part having a ~~relatively~~ shorter operative length than the ~~second fourth~~ part.

21. (Amended) The electrical switch assembly as claimed in claim 20, wherein the ~~first third and second fourth~~ operating parts are separate ~~parts~~.

22. (Amended) The electrical switch assembly as claimed in claim 21, ~~wherein~~ including a resiliently deformable sheet element covering the ~~first third and second fourth~~ operating parts ~~are covered by a resiliently deformable sheet element~~ for operation ~~through a single by pressing action at against~~ the sheet element.

23. (Amended) The electrical switch assembly as claimed in claim 21, wherein one of the ~~first third and second fourth~~ operating parts has a portion engaging the other ~~of the third and fourth~~ operating part for moving the other ~~of the third and fourth~~ operating ~~part during operation~~ parts.

24. (Amended) The electrical switch assembly as claimed in claim 1, comprising ~~one said on/off switch and two said~~ variable resistors, wherein the manual operating means comprises three separate ~~press~~ members for operating the on/off switch and the two variable resistors, respectively.

25. (Amended) The electrical switch assembly as claimed in claim 24, wherein the ~~press~~ member for operating the on/off switch is positioned between the ~~press~~ members for operating the two variable resistors.

26. (Amended) The electrical switch assembly as claimed in claim 24, wherein the ~~press~~ member for operating a first one of the variable resistors has a first portion engaging the ~~press~~ member for operating the on/off switch, for simultaneous operation with the on/off switch.

engaging the first portion ~~and in turn the press member~~ for simultaneous operation of the on/off switch ~~for simultaneous operation.~~

27. (Amended) The electrical switch assembly as claimed in claim 26, ~~wherein~~ including a resiliently deformable sheet means covering the two ~~press~~ members for operating the variable resistors ~~are covered by resiliently deformable sheet means~~, said resiliently deformable sheet means having two regions covering the two ~~press~~ members, respectively, for individual depression to operate ~~one or both~~ the variable resistors.

28. (Amended) The electrical switch assembly as claimed in claim 27, wherein the sheet means comprises a single sheet including a portion ~~that is~~ between the two regions and ~~supported by a fixed member~~ a fixed member supporting the portion against depression.

29. (Amended) An electrical appliance incorporating the electrical switch assembly as claimed in claim 1, ~~said~~ the appliance comprising a casing in which the switch assembly is located ~~such that the operating mechanism is accessible~~, an electrical device located in the casing ~~for performing a function of the appliance~~, and an internal electronic control circuit for controlling ~~the~~ operation of the electrical device, wherein the on/off switch is connected to the electrical device for switching on the electrical device, and the variable resistor is connected to the control circuit for adjusting ~~the~~ an operating condition of the electrical device.

30. (Amended) The electrical appliance as claimed in claim 29, wherein the casing includes a resiliently deformable wall portion, ~~immediately behind which~~ adjacent the operating mechanism ~~is located~~ for operation through depression ~~at~~ of the resiliently deformable wall portion.

32. (Amended) The electrical appliance as claimed in claim 29, wherein the casing is an elongate ~~and acts a~~ handle.

Amendments to the abstract:

ABSTRACT OF DISCLOSURE

An electrical switch assembly for controlling an electrical appliance, ~~which~~ The assembly ~~comprises~~ includes first and second electrical elements. The first element is an on/off switch for initially switching on the appliance. The second element is a pressure-sensitive variable resistor for ~~subsequently~~ adjusting the operating condition of the appliance. The

conducting resistive surface, and a second part having a surface including two contacts and a resistive element connecting the two contacts. One of the parts is movable to press against the other part ~~such~~ so that their surfaces bear against one another, ~~thereby causing the resistive surface to deform against the surface of the second part over an area of contact and causing to~~ make an electrical connection between the resistive surface and the element. The resistive surface and the element together ~~then~~ provide a resultant resistance between the two contacts ~~of a value that reduces declines~~ as the area of contact increases, corresponding to the pressure acting upon the two parts. ~~The assembly includes an operating mechanism for operating the two electrical elements, which incorporates manual operating means for initial movement to operate the on/off switch and subsequent movement, while the on/off switch is on, to operate the variable resistor.~~



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For: ELECTRICAL SWITCH ASSEMBLY

PENDING CLAIMS AFTER ENTRY OF PRELIMINARY AMENDMENT

1. An electrical switch assembly for controlling operation of an electrical appliance, the switch comprising:

first and second electrical elements,

the first electrical element comprising an on/off switch for initially switching on an appliance,

the second electrical element comprising a pressure-sensitive variable resistor for adjusting operating condition of the appliance, the variable resistor comprising a first part having a resilient deformable and electrically conducting resistive surface and a second part having a surface including two contacts and a resistive element connecting one of the contacts to the other of the contacts, one of the first and second parts being moved to press against the other of the first and second parts such that respective surfaces of the first and second parts bear against one another, thereby causing the resistive surface to deform against the surface of the second part over an area of contact and causing electrical connection between the resistive surface and the resistive element, to provide a resultant resistance between the two contacts that declines as the area of contact increases, corresponding to pressure applied to the first and second parts, and

an operating mechanism operating the first and second electrical elements and incorporating manual operating means for initial movement to operate the on/off switch and subsequent movement, while the on/off switch is on, to change the resultant resistance of the variable resistor.

2. The electrical switch assembly as claimed in claim 1, wherein the resistive surface includes fine carbon powder.

3. The electrical switch assembly as claimed in claim 1, wherein the resistive surface has a convex shape facing the surface of the second part of the variable resistor.

4. The electrical switch assembly as claimed in claim 1, wherein the first part of the variable resistor comprises a portion of a resilient deformable and electrically conducting resistive material as the resistive surface.

5. The electrical switch assembly as claimed in claim 4, wherein the resistive material includes fine carbon powder.

6. The electrical switch assembly as claimed in claim 1, wherein the first part of the variable resistor comprises a resilient deformable cup-shaped body including a base having an inner side on which the resistive surface is located.

7. The electrical switch assembly as claimed in claim 6, wherein the cup-shaped body includes a substantially frusto-conical peripheral wall.

8. The electrical switch assembly as claimed in claim 6, wherein the resistive surface includes fine carbon powder.

9. The electrical switch assembly as claimed in claim 1, wherein the resistive element includes fine carbon powder.

10. The electrical switch assembly as claimed in claim 9, wherein the resistive element comprises a carbon film.

11. The electrical switch assembly as claimed in claim 1, wherein the one of the first and second parts that is movable moves to press against the other of the first and second parts in a direction substantially perpendicular to the respective surfaces of the first and second parts.

12. The electrical switch assembly as claimed in claim 1, wherein the first part of the variable resistor is movable and the second part is fixed.

13. The electrical switch assembly as claimed in claim 12, wherein the second part includes a printed circuit board.

14. The electrical switch assembly as claimed in claim 1, wherein the first and second electrical elements have relatively larger and smaller current ratings, respectively.

15. The electrical switch assembly as claimed in claim 1, wherein the on/off switch comprises a micro-switch.

16. The electrical switch assembly as claimed in claim 1, wherein the resistive surface and the resistive element are brought into electrical contact with each other when the respective surfaces of the first and second parts of the variable resistor bear against one another.

17. The electrical switch assembly as claimed in claim 1, wherein the resistive surface and the two contacts are brought into electrical contact with each other when the respective surfaces of the first and second parts of the variable resistor bear against one another.

18. The electrical switch assembly as claimed in claim 17, wherein the surface of the second part of the variable resistor includes more than two contacts for electrical contact with the resistive surface, and a corresponding resistive element connecting adjacent contacts.

19. The electrical switch assembly as claimed in claim 1, wherein the operating mechanism includes a spring resiliently biasing the manual operating means against operation of the first and second electrical elements.

20. The electrical switch assembly as claimed in claim 1, wherein the manual operating means comprises third and fourth parts for operating the on/off switch and the variable resistor respectively, the third part having a shorter operative length than the fourth part.

21. The electrical switch assembly as claimed in claim 20, wherein the third and fourth operating parts are separate.

22. The electrical switch assembly as claimed in claim 21, including a resiliently deformable sheet element covering the third and fourth operating parts for operation by pressing against the sheet element.

23. The electrical switch assembly as claimed in claim 21, wherein one of the third and fourth operating parts has a portion engaging the other of the third and fourth operating part for moving the other of the third and fourth operating parts.

24. The electrical switch assembly as claimed in claim 1, comprising two variable resistors, wherein the manual operating means comprises three separate members for operating the on off switch and the two variable resistors, respectively.

25. The electrical switch assembly as claimed in claim 24, wherein the member for operating the on/off switch is positioned between the members for operating the two variable resistors.

26. The electrical switch assembly as claimed in claim 24, wherein the member for operating a first one of the variable resistors has a first portion engaging the member for operating the on/off switch, for simultaneous operation with the on/off switch, and the member for a second of the variable resistors has a second portion engaging the first portion for simultaneous operation of the on/off switch.

27. The electrical switch assembly as claimed in claim 26, including a resiliently deformable sheet means covering the two members for operating the variable resistors, said resiliently deformable sheet means having two regions covering the two members, respectively, for individual depression to operate the variable resistors.

28. The electrical switch assembly as claimed in claim 27, wherein the sheet means comprises a single sheet including a portion between the two regions and a fixed member supporting the portion against depression.

29. An electrical appliance incorporating the electrical switch assembly as claimed in claim 1, the appliance comprising a casing in which the switch assembly is located, an electrical device located in the casing, and an internal electronic control circuit for controlling operation of the electrical device, wherein the on/off switch is connected to the electrical device for switching on the electrical device, and the variable resistor is connected to the control circuit for adjusting an operating condition of the electrical device.

30. The electrical appliance as claimed in claim 29, wherein the casing includes a resiliently deformable wall portion, adjacent the operating mechanism for operation through depression of the resiliently deformable wall portion.

31. The electrical appliance as claimed in claim 29, wherein the electrical device comprises an electric motor.

32. The electrical appliance as claimed in claim 29, wherein the casing is an elongate handle.